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Import Components and Import Multipliers in Australian Economy: World Input - Output Analysis

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ABSTRACT

This article analysis on import components and import multipliers, using Australian input-output tables 2000, 2005, 2010 and 2014. The results showed that firstly, Australian import components of input were, on average, <20%; meaning that input that locally provided were more than 80%. Australian import of input had increased significantly from US\$ 47,122 million in 2000 to US\$ 14,616 million in 2014. Secondly, Australian imports have been dominated by Sector-8, Sector-13, Sector-24, Sector-25, and Sector-26. Thirdly, Australian imports have been dominated by the USA, Japan, United Kingdom, China and Germany. During 2000-2014, import from Canada, Japan, UK and the USA had declined, but import from China had significantly increased. Finally, highest sectoral import multipliers occurred in Sector-5, Sector-22, Sector-29, Sector-30, Sector-31, and Sector-32, but there was no significant different of import multipliers for country origin of import.

Keywords: Import Components, Sectoral Import Multipliers, Spatial Import Multipliers

JEL Classifications: C67, D57, F17

1. INTRODUCTION

Imports consist of transactions in goods and services to a resident of a jurisdiction such as a nation from non-residents (Lequiller and Blades, 2006). An import of a good occurs when there is a change of ownership from a non-resident to a resident. Imports of services consist of all services rendered by non-residents to residents. In national accounts, import includes and excludes specific "borderline" cases. In macroeconomic theory, the value of imports can be modelled as a function of the domestic absorption and the real exchange rate Burda (2005). There are two basic types of import: Industrial and consumer goods and intermediate goods and services. Companies import goods and services to supply to the domestic market at a cheaper price and better quality than competing goods manufactured in the domestic market.

Australian intermediate input that imported has increase significantly during 2000-2014 (Muchdie, 2017). Trinh et al. (2008) explained that imported intermediate input was shown in the usual Keynesian foreign trade multiplier analysis. In an

open economy, $Y+M = C+I+E$; the external sector is combined inconsistently with the domestic sector in the circular flow. Where, Y stands for net national products (or net final demand) excluding intermediate products, while M stands for imported including intermediate products. On the other hand, Leontief's matrix multiplier is devoted entirely to the analysis of intermediate products in the circular flow, the Leontief system can regard the household sector as an industry whose output is labor income and inputs are consumption products; an analysis of the multiplier process via the consumption function.

The objective of this paper is to analyse import components and the impact of final demand change on Australian imports, known as import multipliers, using Australian 37 sector input-output tables of years: 2000, 2005, 2010 and 2014 from World Input-Output Tables.

2. LITERATURE REVIEW

An import is a good brought into a jurisdiction, especially across a national border, from an external source. The party bringing in the

good is called an importer (Joshi, 2009). An import in the receiving country is an export from the sending country. Importation and exportation are the defining financial transactions of international trade. In international trade, the importation and exportation of goods are limited by import quotas and mandates from the customs authority. Imports consist of transactions in goods and services to a resident of a jurisdiction such as a nation from non-residents (Lequiller and Blades, 2006). An import of a good occurs when there is a change of ownership from a non-resident to a resident. Imports of services consist of all services rendered by non-residents to residents. In national accounts, import includes and excludes specific “borderline” cases. In macroeconomic theory, the value of imports can be modelled as a function of the domestic absorption and the real exchange rate (Burda, 2005). There are two basic types of import: Industrial and consumer goods and intermediate goods and services. Companies import goods and services to supply to the domestic market at a cheaper price and better quality than competing goods manufactured in the domestic market. Trinh et al. (2008) explained that imported intermediate input was shown in the usual Keynesian foreign trade multiplier analysis.

In macroeconomics, a multiplier is a factor of proportionality that measures how much an endogenous variable changes in response to a change in some exogenous variable (see among others: Dornbusch and Stanley, 1994; McConnell et al., 2011; Pindyck and Rubinfeld, 2012). In monetary microeconomics and banking, the money multiplier measures how much the money supply increases in response to a change in the monetary base (see among others: Krugman and Wells, 2009; Mankiw, 2008). Multipliers can be calculated to analyze the effects of fiscal policy, or other exogenous changes in spending, on aggregate output. Other types of fiscal multipliers can also be calculated, like multipliers that describe the effects of changing taxes.

Literature on the calculation of Keynesian multipliers traces back to Kahn’s description of an employment multiplier for government expenditure during a period of high unemployment (Kahn, 1931). At this early stage, Kahn’s calculations recognize the importance of supply constraints and possible increases in the general price level resulting from additional spending in the national economy (Ahiakpor, 2000). Hall (2009) discusses the way that behavioural assumptions about employment and spending affect econometrically estimated Keynesian multipliers.

The literature on the calculation of I-O multipliers traces back to Leontief (1951), who developed a set of national-level multipliers that could be used to estimate the economy-wide effect that an initial change in final demand has on an economy. Isard (1951) then applied input-output analysis to a regional economy. According to Richardson (1985), the first attempt to create regional multipliers by adjusting national data with regional data was Moore and Peterson (1955) for the state of Utah. In a parallel development, Tiebout (1956) specified a model of regional economic growth that focuses on regional exports. His economic base multipliers are based on a model that separates production sold to consumers from outside the region to production sold to consumers in the region. The magnitude of his multiplier is based on the regional supply chain and local consumer spending.

In a survey of input-output and economic base multipliers, Richardson (1985) notes the difficulty inherent in specifying the local share of spending. He notes the growth of survey-based regional input-output models in the 1960s and 1970s that allowed for more accurate estimation of local spending, though at a large cost in terms of resources. To bridge the gap between resource intensive survey-based multipliers and “off-the-shelf” multipliers, Beemiller (1990) of the BEA describes the use of primary data to improve the accuracy of regional multipliers. The literature on the use and misuse of regional multipliers and models is extensive. Coughlin and Mandelbaum (1991) provide an accessible introduction to regional I-O multipliers. They note that key limitations of regional I-O multipliers include the accuracy of leakage measures, the emphasis on short-term effects, the absence of supply constraints, and the inability to fully capture interregional feedback effects.

Grady and Muller (1988) argued that regional I-O models that include household spending should not be used and argue that cost-benefit analysis is the most appropriate tool for analyzing the benefits of particular programs. Mills (1993) noted the lack of budget constraints for governments and no role for government debt in regional IO models. As a result, in less than careful hands, regional I-O models can be interpreted to over-estimate the economic benefit of government spending projects. Hughes (2003) discussed the limitations of the application of multipliers and provides a checklist to consider when conducting regional impact studies. Harris (1997) discussed the application of regional multipliers in the context of tourism impact studies, one area where the multipliers are commonly misused. Siegfried et al. (2006) discussed the application of regional multipliers in the context of college and university impact studies, another area where the multipliers are commonly misused. Input-output analysis, also known as the inter-industry analysis, is the name given to an analytical work conducted by Leontief in the late 1930’s. The fundamental purpose of the input-output framework is to analyze the interdependence of industries in an economy through market-based transactions. Input-output analysis can provide important and timely information on the interrelationships in a regional economy and the impacts of changes on that economy.

The notion of multipliers rests upon the difference between the initial effect of an exogenous change (final demand) and the total effects of a change. Direct effects measure the response for a given industry given a change in final demand for that same industry. Indirect effects represent the response by all local industries from a change in final demand for a specific industry. Induced effects represent the response by all local industries caused by increased (decreased) expenditures of new household income and inter-institutional transfers generated (lost) from the direct and indirect effects of the change in final demand for a specific industry. Total effects are the sum of direct, indirect, and induced effects.

In input-output model, multipliers were distinguished by output, income, employment and other value added. West (1990) defined total output multipliers as summation of initial, direct, indirect and induced effects of change in final demand. Initial effect of change in final demand to household income is initial effect of

output multiply by direct requirement of household coefficients of income. Import multipliers can be defined as impact of direct, indirect and induced of change in final demand. It is hard to find literature on import multipliers, except one by Trinh et al. (2008).

3. METHOD OF ANALYSIS

An input-output table records the “flows of products from each industrial sector considered as a producer to each of the sectors considered as consumers” (Miller and Blair, 1985). It is an “excellent descriptive device” and a powerful analytical technique (Jensen et al., 1979). In the production process, each of these industries uses products that were produced by other industries and produces outputs that will be consumed by final users (for private consumption, government consumption, investment and exports) and also by other industries, as inputs for intermediate consumption (Oosterhaven and Stelder, 2007; Timmer et al. (2015).

The columns of the input composition are the total supply of each product j (X_j); this is comprised by the national production and also by imported products. The value of domestic production consists of intermediate consumption of several industrial inputs i plus value added. The interindustry transactions table is a nuclear part of this table, in the sense that it provides a detailed portrait of how the different economic activities are interrelated. Since intermediate consumption is of the total-flow type, this implies that true technological relationships are being considered. In fact, each column of the intermediate consumption table describes the total amount of each input i consumed in the production of output j , regardless of the geographical origin of that input.

The input-output interconnections can be translated analytically into accounting identities. On the demand perspective, if Z_{ij} denote the intermediate use of product i by industry j and y_i denote the final use of product i , we may write, to each of the n products:

$$X_i = Z_{i1} + Z_{i2} + \dots + Z_{in} + y_i \quad (1)$$

On the supply side, we know that:

$$X_j = Z_{1j} + Z_{2j} + \dots + Z_{nj} + w_j + m_j \quad (2)$$

In which w_j stands for value added in the production of j and m_j for total imports of product j . It is required that, for $i = j$, $x_i = x_j$, i.e. for one specific product, the total output obtained in the use or demand perspective must equal the total output achieved by the supply perspective. These two equations can be easily related to the National Accounts' identities. In general term, Equation (1) can be written as:

$$x = Ax + y \text{ or } x = (I - A)^{-1}y \quad (3)$$

National Input-Output Table of Australia for the year of 2000, 2005, 2010 and 2014 are available from World Input Output Data Base (Timmer et al., 2016; 2015). Calculation on total input, imported input, import coefficients and import multipliers were based on 37 sectors classification of Australian National Tables.

Total input used to produce output could come from domestic and imported; $a_{ij}^n = a_{ij}^{nn} + a_{ij}^{nk}$, where: a_{ij}^n = total input coefficient, a_{ij}^{nn} = domestic input and a_{ij}^{nk} = imported input. Initial effect of import = m_j , direct effect of import = $\sum a_{ij} m_j$, indirect effect of import = $\sum b_{ij} m_j - \sum a_{ij} m_j$, total effect of import = $\sum b_{ij} m_j$, Type-1 import multipliers = $(\sum b_{ij} m_j) / m_j$ (West, 1990). Note that m_j is import output ratio, a_{ij} is direct input coefficients, b_{ij} is the element of open inverse of Leontief matrix $(I - A)^{-1}$ in Equation (3). Sector classifications and country abbreviations are available in Appendixes 1 and 2.

4. RESULTS AND DISCUSSIONS

Table 1 provides input coefficients in Australian economy in the year of 2000, 2005, 2010 and 2014. In the year of 2000, input coefficient in Australian economy, on average, was 0.5575. The sector with highest input coefficient was Sector-8 (0.8011) and the sector with smallest input coefficient was Sector-35 (0.2042). The sector with least input coefficient was indicated as the most efficient sector as it needs less input to produce output. Otherwise, the sector with largest input coefficient was indicated as the least efficient sector as it needs highest input to produce output.

In the year of 2005, input coefficients in Australian economy was, on average, 0.5588 a slightly higher than that of the year 2000. The most efficient sector namely the sector with smallest input coefficient was Sector-35 (0.51). The least efficient sector, the sector with highest input coefficient was Sector-8 (0.8029). In the year of 2010, input coefficients in Australian economy was, on average, 0.5483. In the 2010, Australian economy was more efficient than in the year of 2005 as input coefficient was slightly less than that in the year of 2005. The most efficient sector was Sector-35 (0.2177), and the least efficient sector was Sector-13 (0.8527). In the year of 2014, input coefficients was, on average, 0.5414. This year Australian economy as a whole work the most efficient way as input coefficient was the least compared to the year of 2000, 2005, and 2010.

Table 1 also provides import component of input in Australian economy for the year of 2000, 2005, 2010 and 2014. In the year of 2000, import component of Australian input was, on average 15.21%. The sector with lowest import component of input was Sector-29 (2.27%) and sector with highest import component of input was Sector-4 (34.11%). In the year of 2005, import component of input in Australian economy was 13.63%; slightly lower than that in the year 2000. The sector with lowest import component of input in 2005 was Sector-29 (1.94%) and sector with the highest import component of input was Sector-8 (28.20%). In the year of 2010, import component of input in Australian economy was 15.01%, some increasing occurred if compared to that in the year 2005 (13.63%) but still lower than that of the year 2000 (15.21%). The sector with lowest import component of input in 2010 was Sector-2 (1.31%) and sector with the highest import component of input in the year of 2010 was Sector-15 (31.11%). In the year of 2014, import component of input in Australian economy was 18.30%, much higher than that in the year of 2000, 2005 and 2010. The sector with lowest import component of input was Sector-30 (2.51%) and the sector with highest import component of input was Sector-15 (51.83%).

Table 1: Import components of input in Australian economy (%): 2000, 2005, 2010, and 2014

Sector	2000		2005		2010		2014	
	Import (%)	Total	Import (%)	Total	Import (%)	Total	Import (%)	Total
S-1	8.55	0.5502	8.65	0.5509	8.92	0.5332	10.39	0.5413
S-2	14.31	0.3866	16.27	0.3863	1.31	0.4235	16.63	0.4211
S-3	5.91	0.7229	5.45	0.7238	6.12	0.7096	6.47	0.6992
S-4	34.11	0.6359	15.81	0.6470	30.33	0.5937	26.95	0.5145
S-5	8.42	0.6382	7.57	0.6389	7.75	0.6306	8.02	0.6170
S-6	18.19	0.6591	15.96	0.6606	17.10	0.6778	18.97	0.6795
S-7	19.51	0.5199	17.44	0.5209	17.57	0.5377	18.31	0.6002
S-8	29.07	0.8011	28.20	0.8029	22.64	0.7925	35.32	0.7867
S-9	22.07	0.7402	21.85	0.7406	23.45	0.7160	28.02	0.6478
S-10	15.30	0.5502	13.15	0.5508	16.14	0.6293	20.84	0.6461
S-11	24.38	0.6257	23.32	0.6263	28.52	0.6117	35.06	0.5864
S-12	13.02	0.6506	13.36	0.6509	13.99	0.6336	16.88	0.6351
S-13	20.27	0.7475	21.34	0.7472	21.17	0.8527	28.52	0.8566
S-14	11.05	0.6354	11.74	0.6351	17.95	0.5944	22.48	0.5983
S-15	26.05	0.5556	22.60	0.5573	31.11	0.4786	51.83	0.3194
S-16	24.22	0.6635	22.71	0.6644	28.59	0.6311	34.41	0.6049
S-17	19.15	0.6210	18.66	0.6213	26.15	0.6077	31.53	0.6212
S-18	20.04	0.7701	17.39	0.7726	19.88	0.7606	36.70	0.7504
S-19	30.39	0.5684	26.16	0.5710	28.06	0.5626	29.52	0.6457
S-20	16.15	0.6444	13.60	0.6458	19.46	0.6316	24.47	0.6055
S-22	9.83	0.5619	10.44	0.5618	6.37	0.5732	6.48	0.6184
S-23	10.64	0.4641	10.93	0.4654	9.52	0.4031	7.18	0.5453
S-24	6.90	0.6905	6.45	0.6911	8.62	0.6859	11.51	0.6815
S-25	9.71	0.5074	8.70	0.5090	9.10	0.4822	11.07	0.4598
S-26	12.56	0.5391	12.73	0.5410	11.55	0.5465	14.25	0.5456
S-27	6.11	0.5662	5.41	0.5688	5.44	0.5171	5.74	0.4939
S-28	12.63	0.4955	11.00	0.4966	8.60	0.5041	9.17	0.5082
S-29	2.27	0.2995	1.94	0.3005	2.85	0.3587	4.04	0.3588
S-30	2.67	0.3264	2.42	0.3283	2.25	0.3053	2.51	0.2917
S-31	9.71	0.5463	8.44	0.5479	7.13	0.5122	7.00	0.5138
S-32	8.99	0.5127	7.91	0.5136	6.87	0.5042	6.98	0.5128
S-33	10.36	0.4288	9.15	0.4295	7.89	0.4183	8.42	0.3907
S-34	15.58	0.2606	13.08	0.2613	12.42	0.2512	13.55	0.2450
S-35	20.49	0.2042	16.00	0.2051	15.97	0.2177	19.37	0.2571
S-36	15.86	0.6016	13.89	0.6034	13.83	0.6021	15.54	0.5863
S-37	13.07	0.3792	10.78	0.3800	12.58	0.2499	14.83	0.1032
Average	15.21	0.5575	13.63	0.5588	15.01	0.5483	18.30	0.5414

Source: Processed from WIOT, 2017

Table 2 provides Australian import of input by sector for the year of 2000, 2005, 2010 and 2014. In the year of 2000, total Australian import was US\$ 47,122 million. Sectorally, the highest import was by Sector-13 (US\$ 4,105 million, 8.71%); the smallest import was by Sector-37 (US\$ 195 million, 0.41%). Ten highest sectors in import were by Sector-2 (3.99%), Sector-8 (6.66%), Sector-13 (8.71%), Sector-18 (3.52%), Sector-24 (7.20%), Sector-25 (8.44%), Sector-26 (6.30%), Sector-28 (5.81%), Sector-31 (4.07%) and Sector-33 (3.77%). In the year of 2005, total Australian import was US\$ 80,358 million. Sectorally, the highest import was by Sector-24 (US\$ 7,691 million, 9.57%); the smallest import was by Sector-37 (US\$ 293 million, 0.37%). Ten highest sectors in import were by Sector-2 (6.51%), Sector-8 (6.34%), Sector-13 (8.97%), Sector-24 (9.57%), Sector-25 (8.14%), Sector-26 (7.21%), Sector-28 (4.88%), Sector-31 (4.10%), Sector-33 (3.51%), and Sector-36 (3.06%). In the year of 2010, total Australian import was US\$ 130,290 million.

Sectorally, the highest import was by Sector-24 (US\$ 18,955 million, 14.55%); the smallest import was by Sector-37 (US\$ 322 million, 0.25%). Ten highest sectors in import were by

Sector-2 (10.01%), Sector-8 (3.43%), Sector-13 (8.27%), Sector-24 (14.55%), Sector-25 (7.75%), Sector-26 (6.74%), Sector-28 (3.95%), Sector-31 (3.5%), Sector-33 (2.95%), and Sector-36 (3.02%). In the year of 2014, total Australian import was US\$ 164,616 million. Sectorally, the highest import was by Sector-24 (US\$ 30,457 million, 18.50%); the smallest import was by Sector-37 (US\$ 167 million, 0.10%). Ten highest sectors in import were by Sector-2 (10.01%), Sector-8 (3.43%), Sector-13 (8.27%), Sector-24 (14.55%), Sector-25 (7.75%), Sector-26 (6.74%), Sector-28 (3.95%), Sector-31 (3.5%), Sector-35 (3.94%), and Sector-36 (3.13%).

Imports by Sector-2 had steadily increased from 3.99% in 2000 to 6.51% in 2005 and 10.01% in 2010, but declined to 7.32% in 2014. Imports by Sector-8 had declined from 6.66% in 2000 to 6.34% in 2005 and 3.34% in 2010 and so did import by Sector-23, Sector-31 and Sector-33. In percentage, imports by Sector-13 were relatively stable during 2000 to 2010, but a bit declined in 2014. Imports by Sector-24 had increased significantly from 7.20% in 2000 to 9.57% in 2005, 14.55% in 2010 and 18.50% in 2014. Imports by Sector-25 and Sector-26 had been stable during 2000-2014.

Table 2: Australian import of input by sector (million US\$): 2000, 2005, 2010 and 2014

Sector	2000	2005	2010	2014
	US\$ (%)	US\$ (%)	US\$ (%)	US\$ (%)
S-1	1,504 (3.19)	2,211 (2.75)	3,091 (2.37)	4,278 (2.60)
S-2	1,882 (3.99)	5,228 (6.51)	13,047 (10.01)	12,046 (7.32)
S-3	1,459 (3.10)	2,248 (2.80)	3,452 (2.65)	3,780 (2.30)
S-4	810 (1.72)	637 (0.79)	1,261 (0.97)	702 (0.43)
S-5	270 (0.57)	405 (0.50)	480 (0.37)	445 (0.27)
S-6	466 (0.99)	683 (0.85)	932 (0.71)	1,021 (0.62)
S-7	387 (0.82)	579 (0.72)	755 (0.58)	856 (0.52)
S-8	3,140 (6.66)	5,093 (6.34)	4,465 (3.43)	6,795 (4.13)
S-9	1,386 (2.94)	2,291 (2.85)	3,079 (2.36)	2,934 (1.78)
S-10	239 (0.51)	342 (0.43)	865 (0.66)	1,317 (0.80)
S-11	995 (2.11)	1,589 (1.98)	2,190 (1.68)	2,218 (1.35)
S-12	554 (1.18)	949 (1.18)	1,315 (1.01)	1,665 (1.01)
S-13	4,105 (8.71)	7,204 (8.97)	10,781 (8.27)	10,649 (6.47)
S-14	822 (1.75)	1,457 (1.81)	2,745 (2.11)	3,511 (2.13)
S-15	545 (1.16)	791 (0.98)	1,160 (0.89)	999 (0.61)
S-16	527 (1.12)	826 (1.03)	1,260 (0.97)	1,252 (0.76)
S-17	683 (1.45)	1,110 (1.38)	2,134 (1.64)	2,708 (1.64)
S-18	1,656 (3.52)	2,405 (2.99)	2,834 (2.18)	3,880 (2.36)
S-19	695 (1.47)	1,002 (1.25)	1,565 (1.20)	2,042 (1.24)
S-20	333 (0.71)	469 (0.58)	851 (0.65)	844 (0.51)
S-22	787 (1.67)	1,493 (1.86)	1,725 (1.32)	2,359 (1.43)
S-23	328 (0.70)	603 (0.75)	703 (0.54)	3,117 (1.89)
S-24	3,392 (7.20)	7,691 (9.57)	18,955 (14.55)	30,457 (18.50)
S-25	3,976 (8.44)	6,539 (8.14)	10,098 (7.75)	12,472 (7.58)
S-26	2,970 (6.30)	5,793 (7.21)	8,787 (6.74)	12,175 (7.40)
S-27	878 (1.86)	1,320 (1.64)	1,872 (1.44)	2,184 (1.33)
S-28	2,739 (5.81)	3,920 (4.88)	5,146 (3.95)	5,780 (3.51)
S-29	414 (0.88)	652 (0.81)	1,890 (1.45)	2,912 (1.77)
S-30	461 (0.98)	792 (0.99)	1,174 (0.90)	1,723 (1.05)
S-31	1,920 (4.07)	3,298 (4.10)	4,657 (3.57)	5,039 (3.06)
S-32	1,118 (2.37)	1,964 (2.44)	2,978 (2.29)	3,406 (2.07)
S-33	1,776 (3.77)	2,823 (3.51)	3,842 (2.95)	4,166 (2.53)
S-34	976 (2.07)	1,489 (1.85)	2,349 (1.80)	3,079 (1.87)
S-35	1,120 (2.38)	1,705 (2.12)	3,600 (2.76)	6,493 (3.94)
S-36	1,611 (3.42)	2,461 (3.06)	3,932 (3.02)	5,147 (3.13)
S-37	195 (0.41)	293 (0.37)	322 (0.25)	167 (0.10)
Total	47,122 (100.00)	80,358 (100.00)	130,290 (100.00)	164,616 (100.00)

Source: Processed from WIOT, 2017

Table 3 provides countries where Australia imported goods and services (in million US\$) for the year of 2000, 2005, 2010 and 2014. In the year of 2000, the highest import came from USA (16.35%), the smallest import came from Bulgaria (0.00%). Out of US\$ 47,122 million of Australian import, 1.93% was imported from Canada; 4.06% from China; 3.87% from Germany; 5.28% from UK; 3.36% from Indonesia; 1.84% from Italy; 7.35% from Japan; 2.55% from Korea; 2.91% from Taiwan, 16.35% from USA, and 40.48% from ROW.

In the year of 2005, the highest import came from USA (US\$ 9,243 million; 11.50%), the smallest import came from Cyprus (US\$ 1 million; 0.00%). Goods and services imported from Canada was US\$ 1,346 million (1.67% of total import), from China was US\$ 6,379 million (7.94%), from Germany was US\$ 3,258 million (4.05%), from UK was US\$ 3,521 million (4.38%), from Indonesia was US\$ 2,926 million (3.64%), from Italy was US\$ 1,520 million (1.89%), from Japan US\$4,742 million (5.90%), from Korea US\$1,799 million (2.24%), from Taiwan was US\$ 2,167 million (2.70%), and from the USA was US\$ 9,243 million (11.50%) and the rest US\$ 34,870 million (43.39%) was from ROW, rest

of the world. In the year of 2010, the highest import came from China (US\$ 16,548 million; 12.70%), the smallest import came from Latvia (US\$ 2 million; 0.00%). Goods and services imported from Canada was US\$ 1,287 million (0.99%), from Germany was US\$ 4,920 million (3.78%), from UK was US\$ 4,285 million (3.29%), from Indonesia was US\$ 4,837 million (3.71%), from Italy was US\$ 1,788 million (1.37%), from Japan US\$ 5,738 million (4.40%), from Korea US\$ 3,606 million (2.77%), from Taiwan was US\$ 2,467 million (1.89%), and from the USA was US\$ 12,065 million (9.26%) and the rest US\$ 59,364 million (45.56%) was from ROW.

In the year of 2014, the highest import came from China (US\$ 23,865 million; 14.50%), the smallest import came from Cyprus as well as from Latvia (US\$ 4 million; 0.00%). Goods and services imported from Canada was US\$ 1,309 million (0.80 %), from Germany was US\$ 5,368 million (3.26%), from UK was US\$ 4,475 million (2.72%), from Indonesia was US\$ 4,537 million (2.76%), from Italy was US\$ 2,569 million (1.56%), from Japan US\$ 6,746 million (4.10%), from Korea US\$ 6,831 million (4.15%), from Taiwan was US\$ 3,671 million (2.23%), and from

Table 3: Australian import of input by country (million US\$): 2000, 2005, 2010 and 2014

Country	2000	2005	2010	2014
	US\$ (%)	US\$ (%)	US\$ (%)	US\$ (%)
AUT	160 (0.34)	307 (0.38)	481 (0.37)	562 (0.34)
BEL	241 (0.51)	470 (0.59)	736 (0.56)	1,707 (1.04)
BGR	0 (0.00)	7 (0.01)	8 (0.01)	18 (0.01)
BRA	190 (0.40)	460 (0.57)	698 (0.54)	703 (0.43)
CAN	908 (1.93)	1,346 (1.67)	1,287 (0.99)	1,309 (0.80)
CHE	537 (1.14)	794 (0.99)	1,353 (1.04)	1,464 (0.89)
CHN	1,913 (4.06)	6,379 (7.94)	16,548 (12.70)	23,865 (14.50)
CYP	1 (0.00)	1 (0.00)	5 (0.00)	4 (0.00)
CZE	21 (0.05)	92 (0.11)	165 (0.13)	201 (0.12)
DEU	1,823 (3.87)	3,258 (4.05)	4,920 (3.78)	5,368 (3.26)
DNK	188 (0.40)	358 (0.44)	470 (0.36)	475 (0.29)
ESP	215 (0.46)	452 (0.56)	759 (0.58)	956 (0.58)
EST	1 (0.00)	12 (0.01)	46 (0.04)	79 (0.05)
FIN	281 (0.60)	353 (0.44)	642 (0.49)	526 (0.32)
FRA	816 (1.73)	1,404 (1.75)	1,773 (1.36)	2,075 (1.26)
GBR	2,487 (5.28)	3,521 (4.38)	4,285 (3.29)	4,475 (2.72)
GRC	32 (0.07)	50 (0.06)	44 (0.03)	64 (0.04)
HRV	1 (0.00)	5 (0.01)	4 (0.00)	20 (0.01)
HUN	18 (0.04)	80 (0.10)	121 (0.09)	170 (0.10)
IDN	1,581 (3.36)	2,926 (3.64)	4,837 (3.71)	4,537 (2.76)
IND	304 (0.65)	664 (0.83)	1,159 (0.89)	1,711 (1.04)
IRL	280 (0.59)	344 (0.43)	755 (0.58)	735 (0.45)
ITA	869 (1.84)	1,520 (1.89)	1,788 (1.37)	2,569 (1.56)
JPN	3,462 (7.35)	4,742 (5.90)	5,738 (4.40)	6,746 (4.10)
KOR	1,204 (2.55)	1,799 (2.24)	3,606 (2.77)	6,831 (4.15)
LTU	1 (0.00)	7 (0.01)	14 (0.01)	35 (0.02)
LUX	4 (0.01)	15 (0.02)	36 (0.03)	46 (0.03)
LVA	1 (0.00)	2 (0.00)	2 (0.00)	4 (0.00)
MEX	154 (0.33)	333 (0.41)	584 (0.45)	768 (0.47)
MLT	4 (0.01)	7 (0.01)	4 (0.00)	5 (0.00)
NLD	524 (1.11)	951 (1.18)	1,281 (0.98)	1,829 (1.11)
NOR	88 (0.19)	188 (0.23)	171 (0.13)	314 (0.19)
POL	22 (0.05)	59 (0.07)	163 (0.13)	370 (0.22)
PRT	66 (0.14)	91 (0.11)	76 (0.06)	126 (0.08)
ROU	5 (0.01)	12 (0.01)	20 (0.02)	44 (0.03)
RUS	6 (0.01)	26 (0.03)	315 (0.24)	1,065 (0.65)
SVK	5 (0.01)	12 (0.01)	23 (0.02)	197 (0.12)
SVN	7 (0.02)	25 (0.03)	22 (0.02)	52 (0.03)
SWE	475 (1.01)	861 (1.07)	1,230 (0.94)	1,138 (0.69)
TUR	76 (0.16)	145 (0.18)	224 (0.17)	519 (0.32)
TWN	1,373 (2.91)	2,167 (2.70)	2,467 (1.89)	3,671 (2.23)
USA	7,706 (16.35)	9,243 (11.50)	12,065 (9.26)	14,636 (8.89)
ROW	19,073 (40.48)	34,870 (43.39)	59,364 (45.56)	72,623 (44.12)
Total	47,122 (100.00)	80,358 (100.00)	130,290 (100.00)	164,616 (100.00)

Source: Processed from WIOT, 2017

the USA was US\$ 14,636 million (8.89%) and US\$ 72,623 million (44.12%) was from ROW.

During 2000-2014, import from Canada, Japan, UK and the USA had declined significantly. Import from Canada decreased from 1.93% in 2000 to 0.80% in 2014. Import from Japan, decrease from 7.35% in 2000 to 5.90% in 2005, 4.40% in 2010 and 4.10% in 2014. Import from UK decreased from 5.28% in 2000 to 4.38% in 2005, 3.29% in 2010 and 2.72% in 2014. Import from USA decreased from 16.35% in 2000 to 11.50% in 2005, 9.26% in 2010 and 8.89% in 2014. In contrast, import from China increased significantly from 4.06% in 2000 to 7.94% in 2005, to 12.70% in 2010 and to 14.50% in 2014.

Table 4 provides sectoral import multipliers in Australian economy for the year of 2000 and 2005. Import multipliers were classified

as initial, direct, indirect and total effects of open matrix. Type-1 multiplier is defined as a ratio of total to initial effects.

In the year of 2000, there were some sectors with highest Type-1 import multipliers, namely: Sector-29 (7.9963), Sector-30 (4.6901), Sector-32 (3.3594), Sector-22 (2.7734), Sector-5 (2.7622), Sector-2 (2.7545), and Sector-1 (2.3035). The ratio of total to initial effect was more than 7 times in Sector-29, more than 4 times in Sector-30, more than 3 times in Sector-32. There were some other sectors with Type-1 import multipliers more than 2, namely Sector-22 (2.7734), Sector-5 (2.7622), Sector-28 (2.0925), Sector-26 (2.2606), Sector-23 (2.3026), Sector-14 (2.4768), Sector-12 (2.3176), Sector-7 (2.0301), Sector-2 (2.7545) and Sector-1 (2.3035). Other sectors had Type-1 import multipliers <2.

Table 4: Disaggregated import multipliers by sector in Australian Economy, 2000 and 2005

Sector	2000					2005				
	Initial	Direct	Indirect	Total	Type-1	Initial	Direct	Indirect	Total	Type-1
S-1	0.0019	0.0013	0.0012	0.0044	2.3035	0.0015	0.0010	0.0009	0.0034	2.2563
S-2	0.0024	0.0026	0.0015	0.0065	2.7545	0.0035	0.0032	0.0019	0.0087	2.4569
S-3	0.0018	0.0008	0.0006	0.0033	1.7954	0.0015	0.0007	0.0005	0.0027	1.7907
S-4	0.0010	0.0001	0.0000	0.0011	1.1276	0.0004	0.0002	0.0001	0.0007	1.6910
S-5	0.0003	0.0003	0.0003	0.0009	2.7622	0.0003	0.0003	0.0002	0.0007	2.7449
S-6	0.0006	0.0003	0.0002	0.0011	1.7969	0.0005	0.0002	0.0002	0.0008	1.8291
S-7	0.0005	0.0003	0.0002	0.0010	2.0301	0.0004	0.0002	0.0002	0.0008	2.0332
S-8	0.0039	0.0008	0.0008	0.0056	1.4078	0.0034	0.0007	0.0007	0.0048	1.4130
S-9	0.0017	0.0008	0.0006	0.0031	1.7743	0.0015	0.0006	0.0005	0.0027	1.7506
S-10	0.0003	0.0001	0.0001	0.0005	1.6109	0.0002	0.0001	0.0001	0.0004	1.7399
S-11	0.0013	0.0005	0.0004	0.0022	1.7271	0.0011	0.0004	0.0003	0.0018	1.6753
S-12	0.0007	0.0005	0.0004	0.0016	2.3176	0.0006	0.0004	0.0003	0.0014	2.1280
S-13	0.0052	0.0019	0.0013	0.0083	1.6182	0.0049	0.0018	0.0012	0.0079	1.6259
S-14	0.0010	0.0008	0.0007	0.0026	2.4768	0.0010	0.0007	0.0005	0.0022	2.2310
S-15	0.0007	0.0001	0.0001	0.0009	1.2850	0.0005	0.0001	0.0001	0.0007	1.3173
S-16	0.0007	0.0001	0.0001	0.0009	1.3203	0.0006	0.0001	0.0001	0.0007	1.3046
S-17	0.0009	0.0002	0.0002	0.0013	1.4676	0.0007	0.0002	0.0001	0.0011	1.4093
S-18	0.0021	0.0004	0.0002	0.0027	1.2880	0.0016	0.0003	0.0002	0.0022	1.3316
S-19	0.0009	0.0001	0.0001	0.0011	1.2728	0.0007	0.0001	0.0001	0.0009	1.3223
S-20	0.0004	0.0001	0.0001	0.0006	1.4902	0.0003	0.0001	0.0001	0.0005	1.5409
S-22	0.0010	0.0009	0.0009	0.0027	2.7734	0.0010	0.0008	0.0007	0.0025	2.4919
S-23	0.0004	0.0003	0.0003	0.0009	2.3026	0.0004	0.0002	0.0002	0.0009	2.1615
S-24	0.0043	0.0018	0.0016	0.0076	1.7823	0.0052	0.0021	0.0018	0.0091	1.7482
S-25	0.0050	0.0025	0.0021	0.0096	1.9167	0.0044	0.0022	0.0018	0.0084	1.9116
S-26	0.0037	0.0024	0.0023	0.0084	2.2606	0.0039	0.0023	0.0023	0.0085	2.1760
S-27	0.0011	0.0003	0.0003	0.0017	1.5098	0.0009	0.0002	0.0002	0.0014	1.5284
S-28	0.0034	0.0019	0.0019	0.0072	2.0925	0.0026	0.0014	0.0015	0.0056	2.1030
S-29	0.0005	0.0014	0.0022	0.0042	7.9963	0.0004	0.0013	0.0020	0.0037	8.5114
S-30	0.0006	0.0010	0.0012	0.0027	4.6901	0.0005	0.0009	0.0011	0.0025	4.7530
S-31	0.0024	0.0020	0.0021	0.0065	2.6992	0.0022	0.0018	0.0020	0.0061	2.7346
S-32	0.0014	0.0017	0.0016	0.0047	3.3594	0.0013	0.0016	0.0016	0.0045	3.4031
S-33	0.0022	0.0004	0.0004	0.0030	1.3540	0.0019	0.0004	0.0004	0.0026	1.3771
S-34	0.0012	0.0001	0.0001	0.0015	1.1842	0.0010	0.0001	0.0001	0.0012	1.2189
S-35	0.0014	0.0000	0.0000	0.0014	1.0295	0.0011	0.0000	0.0000	0.0012	1.0384
S-36	0.0020	0.0005	0.0005	0.0030	1.4974	0.0017	0.0004	0.0005	0.0025	1.5262
S-37	0.0002	0.0000	0.0000	0.0003	1.3278	0.0002	0.0000	0.0000	0.0003	1.3707

Source: Processed from WIOT, 2017

In the year of 2005, there were some sectors with highest Type-1 import multipliers, namely: Sector-29 (8.5114), Sector-30 (4.7530), Sector-32 (3.4031), Sector-31 (2.7346), Sector-5 (2.7449), Sector-22 (2.4919), Sector-2 (2.4569), and Sector-1 (2.2563). The ratio of total to initial effect was more than 8 times in Sector-29, more than 4 times in Sector-30, more than 3 times in Sector-32. There were some other sectors with Type-1 import multipliers more than 2, namely Sector-31 (2.7346), Sector-5 (2.7449), Sector-22 (2.4919), Sector-28, Sector-26, Sector-23, Sector-14 (2.2310), Sector-12 (2.1280), Sector-7, Sector-2 (2.4569) and Sector-1. Other sectors had Type-1 import multipliers <2.

During the year of 2000-2005, Sector-29, Sector-30, Sector-32, Sector-22, Sector-5, Sector-28, Sector-26, Sector-23, Sector-14, Sector-12, Sector-7, Sector-2, and Sector-1 have consistently had high import multipliers.

Table 5 provides sectoral import multipliers in Australian economy for the year of 2010 and 2014. In the year of 2010, there were sectors that had Type-1 import multipliers more than 2, namely: Sector-1 (2.1714), Sector-2 (2.1073), Sector-5 (3.05167), Sector-12 (2.2585), Sector-22 (3.3794),

Sector-23 (2.5141), Sector-26 (2.1851), Sector-28 (2.3845), Sector-29 (5.6782), Sector-30 (5.0062), Sector-31 (3.2356), and Sector-32 (3.7109). Increasing final demand in these sectors would increase total import more than twice. Even, in Sector-29, and Sector-30, would increase total import more than 5 times to initial imports.

In the year of 2014, there were sectors with type-1 import multipliers more than 2, namely: Sector-1 (2.1132), Sector-5 (3.4480), Sector-12 (2.3590), Sector-22 (4.3548), Sector-26 (2.0473), Sector-28 (2.4475), Sector-29 (4.9308), Sector-30 (4.9765), Sector-31 (3.5979), and Sector-32 (3.8593). Increasing final demand in these sectors would increase total import more than twice. Even, in Sector-22, Sector-29, and Sector-30 Type-1 import multipliers were more than 4; meaning that the ratio between total effects and initial effects were more than 4 times.

Table 6 provides country-import multipliers in Australian economy: Initial, direct, indirect and total effects, for the year 2000, 2005, 2010 and 2014. In average, Type-1 country-import multipliers in Australian economy were: 1.9435, 1.9580, 1.9409 and 1.8867 consecutively for the year of 2000, 2005, 2010 and 2014.

Table 5: Disaggregated import multipliers by sector in Australian Economy, 2010 and 2014

Sector	2010					2014				
	Initial	Direct	Indirect	Total	Type-1	Initial	Direct	Indirect	Total	Type-1
S-1	0.0012	0.0008	0.0007	0.0027	2.1714	0.0015	0.0009	0.0008	0.0032	2.1132
S-2	0.0053	0.0037	0.0021	0.0111	2.1073	0.0043	0.0025	0.0010	0.0078	1.8105
S-3	0.0014	0.0005	0.0004	0.0023	1.6643	0.0014	0.0005	0.0004	0.0023	1.6695
S-4	0.0005	0.0001	0.0000	0.0006	1.2409	0.0003	0.0000	0.0000	0.0003	1.3021
S-5	0.0002	0.0002	0.0002	0.0006	3.0167	0.0002	0.0002	0.0002	0.0006	3.4880
S-6	0.0004	0.0001	0.0001	0.0006	1.6969	0.0004	0.0001	0.0001	0.0006	1.6645
S-7	0.0003	0.0002	0.0001	0.0006	1.9873	0.0003	0.0001	0.0001	0.0006	1.9254
S-8	0.0018	0.0004	0.0004	0.0027	1.4819	0.0024	0.0005	0.0004	0.0033	1.3472
S-9	0.0012	0.0004	0.0003	0.0020	1.5810	0.0011	0.0003	0.0002	0.0016	1.5093
S-10	0.0003	0.0001	0.0001	0.0005	1.4685	0.0005	0.0001	0.0001	0.0007	1.3884
S-11	0.0009	0.0003	0.0002	0.0014	1.5368	0.0008	0.0002	0.0001	0.0012	1.4703
S-12	0.0005	0.0004	0.0003	0.0012	2.2585	0.0006	0.0005	0.0003	0.0014	2.3590
S-13	0.0043	0.0011	0.0006	0.0061	1.4039	0.0038	0.0008	0.0004	0.0050	1.3180
S-14	0.0011	0.0006	0.0004	0.0021	1.9077	0.0013	0.0006	0.0004	0.0023	1.8491
S-15	0.0005	0.0001	0.0001	0.0006	1.2633	0.0004	0.0001	0.0000	0.0005	1.3157
S-16	0.0005	0.0001	0.0001	0.0007	1.3357	0.0004	0.0001	0.0001	0.0007	1.4977
S-17	0.0009	0.0002	0.0001	0.0012	1.3492	0.0010	0.0003	0.0002	0.0014	1.4874
S-18	0.0011	0.0003	0.0002	0.0016	1.4318	0.0014	0.0002	0.0001	0.0017	1.1878
S-19	0.0006	0.0001	0.0001	0.0008	1.3014	0.0007	0.0001	0.0001	0.0010	1.2971
S-20	0.0003	0.0001	0.0001	0.0005	1.4068	0.0003	0.0001	0.0000	0.0004	1.3596
S-22	0.0007	0.0008	0.0009	0.0023	3.3794	0.0008	0.0013	0.0015	0.0037	4.3548
S-23	0.0003	0.0002	0.0002	0.0007	2.5141	0.0011	0.0003	0.0002	0.0016	1.4474
S-24	0.0076	0.0028	0.0022	0.0126	1.6542	0.0109	0.0039	0.0028	0.0177	1.6163
S-25	0.0041	0.0020	0.0016	0.0077	1.9023	0.0045	0.0022	0.0016	0.0083	1.8613
S-26	0.0035	0.0021	0.0020	0.0077	2.1851	0.0044	0.0024	0.0021	0.0090	2.0473
S-27	0.0008	0.0002	0.0002	0.0012	1.5985	0.0008	0.0003	0.0003	0.0013	1.6734
S-28	0.0021	0.0013	0.0016	0.0049	2.3845	0.0021	0.0013	0.0017	0.0051	2.4475
S-29	0.0008	0.0014	0.0022	0.0043	5.6782	0.0010	0.0017	0.0024	0.0052	4.9308
S-30	0.0005	0.0008	0.0010	0.0024	5.0062	0.0006	0.0011	0.0013	0.0031	4.9765
S-31	0.0019	0.0020	0.0022	0.0061	3.2356	0.0018	0.0022	0.0025	0.0065	3.5979
S-32	0.0012	0.0016	0.0017	0.0044	3.7109	0.0012	0.0017	0.0018	0.0047	3.8593
S-33	0.0015	0.0003	0.0003	0.0022	1.4356	0.0015	0.0004	0.0002	0.0021	1.4119
S-34	0.0009	0.0001	0.0001	0.0011	1.1796	0.0011	0.0001	0.0001	0.0013	1.1561
S-35	0.0014	0.0000	0.0000	0.0015	1.0480	0.0023	0.0000	0.0000	0.0024	1.0376
S-36	0.0016	0.0004	0.0005	0.0025	1.5728	0.0018	0.0006	0.0005	0.0030	1.5965
S-37	0.0001	0.0000	0.0000	0.0002	1.4127	0.0001	0.0000	0.0000	0.0001	1.7892

Source: Processed from WIOT, 2017

In the year of 2000, the highest Type-1 import multiplier was import from Canada (2.0213), followed by import from Italy (1.985). The smallest Type-1 import multiplier was import from the USA (1.9022). Increasing final demand in Australia by 1%, initially increased import from the USA by 0.0097%, directly increased import from the USA by 0.0046%, indirectly increased import from the USA by 0.0130%, resulting total effect to 0.0184%. There was no significant different by country of import origin, in term Type-1 import multipliers. In the year of 2005, the highest Type-1 import multiplier was import from Italy (2.0120), followed by import from France (2.0019). The smallest Type-1 import multiplier was import from Germany (1.9260). Increasing final demand in Australia by 1%, initially increased import from Germany by 0.0022%, directly increased import from Germany by 0.0011%, indirectly increased import from Germany by 0.0011%, resulting total effect to Australian import by 0.0044%. Again, in the year of 2005, there was no significant different by country of import origin, in term Type-1 import multipliers.

In the year of 2010, the highest Type-1 import multiplier was import from Indonesia (2.0122) and the smallest Type-1 import multiplier was import from Germany (1.8994). In the year 2010,

there were no significant different Type-1 import multipliers based on the country of import origin. In the year of 2014, the highest Type-1 import multiplies was import from Indonesia (1.9407) and the smallest Type-1 import multiplier was import from Germany (1.8474). In the year of 2014, there were no significant different Type-1 import multipliers based on the country of import origin.

5. CONCLUSION

From discussion above, some conclusion could be drawn. Firstly, Australian import components of input were, on average, <20%; meaning that input that locally provided were more than 80%. Australian import of input had increased significantly from US\$ 47,122 million in 2000 to US\$ 14,616 million in 2014.

Secondly, Australian imports have been dominated by S-13: Manufacture of basic metals, S-25: Wholesale and retail trade and repair, S-24: Construction, S-8: Manufacture of coke and refined petroleum products, and S-26: Transportation and post services.

Thirdly, by country of origin, Australian imports have been dominated by the USA, Japan, United Kingdom, China and

Table 6: Import multipliers by country in Australian Economy, 2000, 2005, 2010, and 2014

Country	2000					2005				
	Initial	Direct	Indirect	Total	Type-1	Initial	Direct	Indirect	Total	Type-1
CAN	0.0011	0.0006	0.0006	0.0023	2.0213	0.0009	0.0005	0.0004	0.0018	1.9894
CHN	0.0024	0.0012	0.0011	0.0046	1.9306	0.0043	0.0022	0.0020	0.0085	1.9727
DEU	0.0023	0.0011	0.0011	0.0045	1.9610	0.0022	0.0011	0.0011	0.0044	1.9883
FRA	0.0010	0.0005	0.0005	0.0020	1.9708	0.0009	0.0005	0.0005	0.0019	2.0019
GBR	0.0031	0.0015	0.0014	0.0060	1.9060	0.0024	0.0011	0.0011	0.0046	1.9260
IDN	0.0020	0.0010	0.0009	0.0039	1.9862	0.0020	0.0010	0.0009	0.0039	1.9856
ITA	0.0011	0.0006	0.0005	0.0022	1.9857	0.0010	0.0005	0.0005	0.0021	2.0120
JPN	0.0044	0.0022	0.0020	0.0085	1.9603	0.0032	0.0016	0.0015	0.0063	1.9846
KOR	0.0015	0.0008	0.0007	0.0030	1.9688	0.0012	0.0006	0.0006	0.0024	1.9828
TWN	0.0017	0.0008	0.0008	0.0033	1.9294	0.0015	0.0007	0.0007	0.0029	1.9629
USA	0.0097	0.0046	0.0042	0.0184	1.9022	0.0062	0.0030	0.0028	0.0120	1.9281
ROW	0.0289	0.0145	0.0130	0.0563	1.9495	0.0283	0.0142	0.0127	0.0553	1.9521
TOTAL	0.0592	0.0292	0.0266	0.1151	1.9435	0.0541	0.0271	0.0248	0.1060	1.9580
Country	2010					2014				
	Initial	Direct	Indirect	Total	Type-1	Initial	Direct	Indirect	Total	Type-1
CAN	0.0005	0.0003	0.0002	0.0010	1.9331	0.0005	0.0002	0.0002	0.0009	1.8873
CHN	0.0067	0.0032	0.0030	0.0128	1.9230	0.0086	0.0040	0.0036	0.0161	1.8831
DEU	0.0020	0.0010	0.0009	0.0039	1.9521	0.0019	0.0009	0.0008	0.0036	1.8916
FRA	0.0007	0.0004	0.0003	0.0014	1.9592	0.0007	0.0004	0.0003	0.0014	1.8879
GBR	0.0017	0.0008	0.0007	0.0033	1.8994	0.0016	0.0007	0.0006	0.0030	1.8474
IDN	0.0019	0.0010	0.0009	0.0039	2.0122	0.0016	0.0008	0.0007	0.0032	1.9407
ITA	0.0007	0.0004	0.0003	0.0014	1.9583	0.0009	0.0004	0.0004	0.0018	1.9030
JPN	0.0023	0.0011	0.0011	0.0045	1.9553	0.0024	0.0012	0.0010	0.0046	1.8977
KOR	0.0015	0.0007	0.0007	0.0028	1.9437	0.0025	0.0012	0.0010	0.0047	1.9020
TWN	0.0010	0.0005	0.0005	0.0019	1.9434	0.0013	0.0006	0.0006	0.0025	1.8879
USA	0.0049	0.0023	0.0021	0.0092	1.9005	0.0053	0.0024	0.0021	0.0097	1.8535
ROW	0.0286	0.0143	0.0127	0.0556	1.9466	0.0318	0.0152	0.0131	0.0601	1.8894
TOTAL	0.0524	0.0259	0.0234	0.1018	1.9409	0.0592	0.0280	0.0244	0.1116	1.8867

Source: Processed from WIOT, 2017

Germany. During 2000-2014, import from Canada, Japan, UK and the USA had declined but import from China had significantly increased. Finally, highest sectoral import multipliers occurred if final demands change in S-5: Manufacture of wood and of products of wood and cork, except furniture, S-22: Electricity, gas, steam and air conditioning supply, S-29: Financial, pension funding and insurance services, S-30: Real estate activities, S-31: Legal and management consultancy, architectures and engineering, scientific research and development, and S-32: Administrative and support service activities, but there was no significant different of import multipliers for country origin of import.

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APPENDICES

Appendix 1: Sector classifications

Sector code	Descriptions
Sector-1	Crop and animal production, forestry, fishing and aquaculture
Sector-2	Mining and quarrying
Sector-3	Manufacture of food products, beverages and tobacco products
Sector-4	Manufacture of textiles, wearing apparel and leather products
Sector-5	Manufacture of wood and of products of wood and cork, except furniture
Sector-6	Manufacture of paper and paper products
Sector-7	Printing and reproduction of recorded media
Sector-8	Manufacture of coke and refined petroleum products
Sector-9	Manufacture of chemicals and chemical products
Sector-10	Manufacture of basic pharmaceutical products and pharmaceutical preparations
Sector-11	Manufacture of rubber and plastic products
Sector-12	Manufacture of other non-metallic mineral products
Sector-13	Manufacture of basic metals
Sector-14	Manufacture of fabricated metal products, except machinery and equipment
Sector-15	Manufacture of computer, electronic and optical products
Sector-16	Manufacture of electrical equipment
Sector-17	Manufacture of machinery and equipment n.e.c
Sector-18	Manufacture of motor vehicles, trailers and semi-trailers
Sector-19	Manufacture of other transport equipment
Sector-20	Manufacture of furniture; other manufacturing
Sector-21	Other manufacturing
Sector-22	Electricity, gas, steam and air conditioning supply
Sector-23	Water collection, sewerage; waste collection, treatment and disposal activities
Sector-24	Construction
Sector-25	Wholesale and retail trade and repair
Sector-26	Transportation and post services
Sector-27	Accommodation and food service activities
Sector-28	Telecommunications, information and publication
Sector-29	Financial, pension funding and insurance services
Sector-30	Real estate activities
Sector-31	Legal and management, architectures and engineering, research and development
Sector-32	Administrative and support service activities
Sector-33	Public administration and defense; compulsory social security
Sector-34	Education
Sector-35	Human health and social work activities
Sector-36	Other service activities
Sector-37	Activities of households as employers

Source: Aggregated from WIOT, 2017

Appendix 2: Country abbreviations

No.	Acronym	Country included	No.	Acronym	Country included
1.	AUS	Australia	23.	IRL	Ireland
2.	AUT	Austria	24.	ITA	Italy
3.	BEL	Belgium	25.	JPN	Japan
4.	BGR	Bulgaria	26.	KOR	Korea
5.	BRA	Brazil	27.	LTU	Lithuania
6.	CAN	Canada	28.	LUX	Luxembourg
7.	CHE	Switzerland	29.	LVA	Latvia
8.	CHN	China	30.	MEX	Mexico
9.	CYP	Cyprus	31.	MLT	Malta
10.	CZE	Czech Republic	32.	NLD	Netherlands
11.	DEU	Germany	33.	NOR	Norway
12.	DNK	Denmark	34.	POL	Poland
13.	ESP	Spain	35.	PRT	Portugal
14.	EST	Estonia	36.	ROU	Romania
15.	FIN	Finland	37.	RUS	Russia
16.	FRA	France	38.	SVK	Slovak Republic
17.	GBR	United Kingdom	39.	SVN	Slovenia
18.	GRC	Greece	40.	SWE	Sweden
19.	HRV	Croatia	41.	TUR	Turkey
20.	HUN	Hungary	42.	TWN	Taiwan
21.	IDN	Indonesia	43.	USA	United States
22.	IND	India	44.	ROW	Rest of the World

Source: Processed from WIOT, 2017